What is claimed is:

1. A method for identifying artifacts in optical measurements conducted for the purpose of determination of the concentration of an analyte in a tissue, the method comprising the steps of:

(a) providing an apparatus for measuring at least one optical property of the tissue;

(b) introducing electromagnetic radiation at at least one wavelength into the tissue by means of the apparatus;

(c) collecting optical data from the tissue over a selected period of time;

(d) introducing the collected data into an algorithm to identify an artifact in the data, the artifact resulting from movement of the probe or the tissue during a brief period of time; and

(e) determining whether an artifact has appeared in the data.

2. The method of claim 1, further including the step of (f) providing a signal to an operator to indicate the occurrence of an artifact or to identify data that are suspect.

3. The method of claim 1, wherein the optical data comprises reflectance measurements derived from introduction of light at at least one light introduction site by means of at least one light introducing element and collection of light at at least one light collection site by means of at one light collecting element, the at least one light introducing element and the at least one light collecting element being in contact with the tissue.

4. The method of claim 1, wherein the optical data are collected in a sequential manner to determine a change in blood pressure.

5. The method of claim 1, wherein the optical data are collected in a sequential manner to determine a change in at least one value selected from the group consisting of blood oxygen saturation, the concentration of hemoglobin, value of hematocrit, or the concentration of glucose.

6. The method of claim 1, wherein the electromagnetic radiation has a wavelength in the range of from about 400 nm to about 2200 nm.

7. The method of claim 1, wherein the electromagnetic radiation has a wavelength in the range of from about 400 nm to about 1100 nm.

8. The method of claim 1, wherein the optical data is collected sequentially.

9. The method of claim 1, wherein the data is independent of the cardiac pulse.

10. The method of claim 1, wherein the algorithm is applied to the data in real-time.

11. The method of claim 1, further comprising the step of alerting the operator of an occurrence of an artifact.

12. The method of claim 1, further comprising the step of alerting the operator to exclude data that contains an artifact from subsequent calculation.

13. The method of claim 1, wherein a set of values is calculated from the data points, the values selected from the group consisting of:

$$S(i) = [1 - P] \bullet S(i-1) + P \bullet [X(i) - X(i-1)] \qquad (1)$$

$$A(i) = [1 - P] \bullet [A(i-1) + S(i)] + P \bullet X(i) \qquad (2)$$

$$D(i) = | X(i) - A(i) | \qquad (3)$$

Where:

N = effective quantity of data points in the moving average for the algorithm (N = value greater than 1, as specified by user)

Dc = artifact threshold value for D(i) (Dc = value greater than 0, as specified by user)

P = algorithm constant (P = 2/[N + 1])

i = current data point number (i is greater than 1)

X(i) = value of the current data point

X(i-1) = value of the previous data point

X(1) = value of the first data point

S(i) = value of slope parameter at the current data point

S(i-1) = value of slope parameter at the previous data point

S(1) = value of slope parameter at the first data point (S(1) = 0)

A(i) = value of moving average at the current data point

A(i-1) = value of moving average at the previous data point

A(1) = value of moving average at the first data point (A(1) = X(1))

D(i) = absolute difference between X(i) and A(i) at the current data point.